DOCUMENT RESUME

ED 046 972 TM 000 332

AUTHOR Bayuk, Robert J., Jr.; Proger, Barton B.
TITLE Additional Evidence of the Multidimensionality of the Test Anxiety Scale for Children.
PUB DATE Feb 71
NOTE 3p.; Paper presented at the Annual Meeting of the American Educational Research Association, New York, New York, February 1971

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS *Anxiety, *Attitude Tests, *Elementary School Students, *Factor Structure, Personality Tests, Reactive Behavior, Sex Differences, *Tests
IDENTIFIERS *Test Anxiety Scale for Children (TASC)

ABSTRACT

Factor analysis was used to investigate the multidimensionality of the Test Anxiety Scale for Children (TASC). Originally designed as a unidimensional measure, subsequent research has indicated more than one meaningful dimension. A principal axis solution and varimax rotation was applied using the squared multiple correlations as initial communality estimates. Analyses were performed on the 30 TASC items rotating 3, 4, and 5 factors for males and females separately. The four-factor solution was found to be the most meaningful psychologically. The largest factor for both sexes was "test anxiety." The unidimensional interpretation of the TASC was questioned in relation to these findings. (Author)

ED046972

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

Additional evidence of the multidimensionality of the Test Anxiety Scale for Children

by

Robert J. Bayuk, Jr. and Barton B. Proger

The Test Anxiety Scale for Children (TASC), developed by Sarason, Davidson, Lighthall, Waite, and Ruebush, 1960 is, perhaps, the most widely used measure of "test anxiety" for young children. Prior to its inception little research on situation-specific anxiety had been conducted. These authors sought to develop an instrument that might prove valuable in helping to gain insights into the general properties of anxiety through a focus on test anxiety. In addition to the interest in evaluating theory, Sarason, et. al. felt that the study would have relevance for the development of methodologies, whereby attitudes, toward test-taking could be identified and their effects upon performance and behavior evaluated.

The TASC, developed with reference to a Freudian concept of anxiety, was designed with the rationale that anxiety could be identified, was, in part, situation-specific, was a conscious experience, and could be described as having somatic mnifestations. The TASC was developed as a unidimensional instrument, and produces only one "score," the sum of the individual's positive responses across all items. Several investigators (Dunn, 1964a; 1964b; 1965; Feld and Lewis, 1967) have questioned the unidimensionality of the TASC, especially since Sarason and his associates specified in their original monograph that several dimensions of anxiety were to be tapped by the scale.

Dunn (1964a) identified four factors in the TASC, test anxiety accounting for 45% of the total common variance, for a group of elementary school children. Dunn (1964b) also found that the response dimensions obtained through the previous factor analysis could be replicated using elementary linkage analysis as well. Dunn (1965) also found that sufficient sex differences in the response dimensions of the TASC warranted interpretation of TASC scores separately for the sexes. Feld and Lewis (1967) confirmed Dunn's earlier findings of the multidimensionality of the TASC as well as the sex differences

TM000332

that occur.

A brief review of the literature does suggest that the factor structure of the TASC is indeed multidimensional in nature. The intention of this investigation was to confirm the previous evidence of the multi-factorial nature of the TASC as well as the sex differences that occur.

Method

All children (N=412) attending sixth-grade classes at a local elementary school on the day of testing participated in the study. Testing was completed in one day. The TASC was administered orally in the classroom by the regular teacher. All teachers had been briefed on standardized test procedures and a standard set of instructions proceeded the testing. Subjects were requested to read along while the examiner (teacher) read each item aloud. Subjects were asked all 30 items of the TASC altering only one item (#2). The instructions indicated that each question should be answered by circling either "Yes" or "No" on the answer sheet. Questions were repeated when necessary.

All factor analyses were performed using the BMDX72 Factor Analysis program. Initial communality estimates were squared multiple correlations. Since one purpose of this analysis was to obtain factors which were "psychologically meaningful" a rather liberal, and intuitive approach was followed. As Findley (1969) suggests, factoring of a correlation matrix should be done not to satisfy some criterian, but successively additional factors should be extracted until the meaning of the pattern is clarified. A review of the literature suggested that four factors can be meaningfully extracted from the TASC. With this in mind factor analyses were performed on the 30 TASC items rotating 3, 4, and 5 factors. These analyses were done on the data for males and females separately as the previous work suggested.

The purpose of the sequential factoring of the TASC item intercorrelation matrix was to obtain a solution such that the factors obtained; 1) would be psychologically meaningful, and 2) would be generally orthogonal and independent e. g., variables would have high factor loadings ($>.30$) on one factor and low factor loadings ($<.20$) on the other factors.

Inspection of the factor loading matrix for the four factor solution for boys and

girls appear to satisfy the two criteria specified. Factor 1 can be labeled Test Anxiety and account for 8% of the total variance. Seven of the ten variables (items) having the highest leadings on this factor make reference to "tests" in the question stem. The first factor for girls was also Test Anxiety and accounted for 12% of the total variance. The second factor for boys accounted for 8% of the total variance and was labeled Remote School Concern and Dream Anxiety. For girls, factor 2, Peer Evaluation Anxiety, accounted for 7% of the total variance. Factor 3 for boys was labeled Somatic Reactions to Anxiety, while factor 3 for girls was labeled Arithmetic Evaluation Anxiety. This factor accounted for 10% and 5% of the total variance for boys and girls, respectively. Finally, factor 4 for boys was labeled Arithmetic Evaluation Anxiety accounting for 5% of the total variance. This factor for girls was labeled Remote School Concern and Dream Anxiety and accounted for 7% of the variance.

While the three-factor and five-factor solutions provide situations that satisfy some "rules of thumb" for how many factors to extract, neither solution results in a readily interpretable factor loading pattern in the psychological sense. The four-factor solution results in three factors that are similar for both sexes. Furthermore, two factors that were extracted for the sexes tend to confirm the expectations and theoretical notions of the TASC authors. Not only was a "Test Anxiety" factor identified, but a Somatic Anxiety factor also was obtained. In any event, the TASC does not appear to be a unidimensional scale and more and better information might be obtained if multiple scores were taken from the scale.

A sequential factor analysis of the TASC indicated that four factors could be meaningfully interpreted. Past research has indicated a negative scholarship between total TASC scores and school achievement. Future research might clarify whether this type relationship is a function of only one of the dimensions underlying responses to the TASC. Also, with additional evidence, a revised and expanded version of the TASC might make the factors more reliable.